

What is claimed is:

1. An illumination system, comprising:

a plurality of light source modules, each light source module comprising a light-emitting surface;

5 an illumination target; and

a system of optical elements disposed between the plurality of light source modules and the illumination target;

wherein the system of optical elements images the emitting surfaces of the light source modules onto the illumination target creating a plurality of images of the emitting surfaces.

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2. The illumination system as recited in claim 1, wherein the images of the emitting surfaces are substantially superimposed to form an illumination patch, said illumination patch substantially filling the illumination target.

15 3. The illumination system as recited in claim 2, wherein the illumination patch overfills the illumination target.

4. The illumination system as recited in claim 2, wherein a shape of at least one of the emitting surfaces substantially matches a shape of the illumination target.

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5. The illumination system as recited in claim 4, wherein the shape of the illumination target is substantially square.

6. The illumination system as recited in claim 5, wherein the illumination target is an entrance of a light tunnel.

5 7. The illumination system as recited in claim 4, wherein the shape of the illumination target is substantially rectangular.

8. The illumination system as recited in claim 7, wherein the illumination target is an image-forming device.

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9. The illumination system as recited in claim 2, wherein a shape of at least one of the emitting surfaces is substantially square, a shape of the illumination target is substantially rectangular, and the system of optical elements is configured so that a shape of the illumination patch substantially matches the shape of the illumination target.

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10. The illumination system as recited in claim 1, wherein the plurality of light source modules are disposed in an array within a non-radially symmetrical aperture.

11. The illumination system as recited in claim 1, wherein the images of the emitting
20 surfaces are closely packed thus forming an illumination patch, said illumination patch substantially filling the illumination target.

12. The illumination system as recited in claim 1, wherein the images of the emitting surfaces overlap thus forming an illumination patch, said illumination patch substantially filling the illumination target.

5 13. The illumination system as recited in claim 12, wherein the illumination target is an LCD comprising a plurality of pixels.

14. The illumination system as recited in claim 1, wherein the light source modules and the system of optical elements are configured to form a plurality of channels aimed
10 substantially into the illumination target.

15. The illumination system as recited in claim 14, wherein the light source modules are disposed tangentially to and along a spherical surface.

15 16. The illumination system as recited in claim 14, wherein the light source modules are disposed substantially coplanar with each other and the system of optical elements comprises means for aiming at least some light from each light source module substantially toward the illumination target.

20 17. The illumination system as recited in claim 1, wherein the system of optical elements comprises a pair of meniscus lenses associated with each light source module, each pair of meniscus lenses configured so that a first meniscus lens has a convex side and a concave side

and a second meniscus lens has a convex side and a concave side and disposed so that the concave side of the second meniscus lens is adjacent to the convex side of the first meniscus lens and the concave side of the first meniscus lens faces the emitting surface of the associated light source module.

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18. The illumination system as recited in claim 1, wherein the system of optical elements comprises a plurality of pairs of meniscus lenses, each pair associated with a respective light source module and configured so that a first meniscus lens has a convex side and a concave side and a second meniscus lens has a convex side and a concave side and disposed so that the concave side of the second meniscus lens is adjacent to the convex side of the first meniscus lens and the concave side of the first meniscus lens faces the emitting surface of the associated light source module, and wherein the system of optical elements further comprises a condenser disposed between the plurality of pairs of meniscus lenses and the illumination target.

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19. An illumination system, comprising:

a plurality of light source modules, each light source module comprising a plurality of emitting surfaces of different colors disposed next to each other;

an illumination target; and

20 a system of optical elements disposed between the plurality of light source modules and the illumination target;

wherein the system of optical elements images the plurality of emitting surfaces onto the illumination target.

20. The illumination system as recited in claim 19, wherein each light source module
5 comprises a first light-emitting surface of a first color, a second light-emitting surface of a second color and a third light-emitting surface of a third color.

21. The illumination system as recited in claim 20, wherein the images of the emitting
surfaces are substantially superimposed to form an illumination patch, said illumination patch
10 substantially filling the illumination target.

22. The illumination system as recited in claim 21, wherein the illumination patch
overfills the illumination target.

23. The illumination system as recited in claim 20, wherein the system of optical elements
15 comprises dichroic mirrors.

24. The illumination system as recited in claim 20, wherein the illumination target
comprises first, second and third color zones, and wherein the system of optical elements
20 images the first emitting surface onto the first color zone, the second emitting surface onto the second color zone, and the third emitting surface onto the third color zone.

25. The illumination system as recited in claim 24, wherein the system of optical elements comprises a lenticular array disposed between the plurality of light source modules and the illumination target.

5 26. The illumination system as recited in claim 20, wherein the first, second and third colors are primary colors.

27. The illumination system as recited in claim 19, wherein the system of optical elements comprises a pair of meniscus lenses associated with each light source module, each pair of
10 meniscus lenses configured so that a first meniscus lens has a convex side and a concave side and a second meniscus lens has a convex side and a concave side and disposed so that the concave side of the second meniscus lens is adjacent to the convex side of the first meniscus lens and the concave side of the first meniscus lens faces the emitting surface of the associated light source module.

15 28. The illumination system as recited in claim 19, wherein the system of optical elements comprises a plurality of pairs of meniscus lenses, each pair associated with a respective light source module and configured so that a first meniscus lens has a convex side and a concave side and a second meniscus lens has a convex side and a concave side and disposed so that the
20 concave side of the second meniscus lens is adjacent to the convex side of the first meniscus lens and the concave side of the first meniscus lens faces the emitting surface of the associated light source module, and wherein the system of optical elements further comprises a

condenser disposed between the plurality of pairs of meniscus lenses and the illumination target.

29. An illumination system, comprising:

5 a plurality of light source modules disposed in an array within a non-radially symmetrical aperture;

an illumination target; and

a system of optical elements disposed between the plurality of light source modules and the illumination target.

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30. The illumination system as recited in claim 29, wherein the illumination target is an image-forming device having a plurality of mirrors rotatable about a pivot axis, and wherein the non-radially symmetrical aperture has a long dimension and a short dimension and is oriented so that the long dimension is aligned with the pivot axis of the mirrors of the image-forming device.

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31. An illumination system, comprising:

a plurality of light source modules, each light source module comprising a light-emitting surface;

20 an illumination target; and

a system of optical elements disposed between the plurality of light source module and the illumination target;

wherein the light source modules and the system of optical elements are configured to form a plurality of channels aimed substantially into the illumination target.

32. The illumination system as recited in claim 31, wherein the light source modules are
5 disposed tangentially to and along a spherical surface.

33. The illumination system as recited in claim 31, wherein the light source modules are
disposed substantially coplanar with each other and the system of optical elements comprises
means for aiming at least some light from each light source module substantially toward the
10 illumination target.